

Part 1 Issues and New Trends

1 History of Measures for Environmental Management in the Seto Inland Sea

The Seto Inland Sea is an inland sea with many beautiful islands and abundant marine resources. Since ancient times many people have inhabited its coasts, resulting in the development of fishing, maritime transport and other industries and creating unique regional cultures.

However, these economic and geographical conditions, combined with other attributes such as the fact that the Seto Inland Sea is shallow to a considerable distance from the shore and is therefore calm, caused many different industries to accumulate in areas along its coast, particularly in the period of rapid economic growth that followed the end of the Second World War. Many shallow areas were reclaimed from the sea and industrial wastes and domestic sewage caused frequent "red tides."

Calls from the local community for action resulted in the enactment of the Seto Inland Sea Environmental Management Emergency Disposition Law (Seto naikai kankyo hozen rinji sochiho) in July 1973, a law that was made permanent in June 1978 as the Seto Inland Sea Environmental Management Special Measures Law (Seto naikai kankyo hozen tokubetsu sochiho) hereinafter referred to as the "Seto Inland Sea Law". This law established special measures such as the enactment of a Basic Plan for Environmental Management of the Seto Inland Sea, hereinafter referred to as the "Basic Plan", a system for approving the establishment of special facilities, standards for total pollution loads, guidelines for the reduction of designated substances, designation of natural beach preserves, and special considerations for land reclamation. Particularly ground-breaking were the standards for total pollution loads and special considerations for land reclamation. Moreover, the scope of environmental management targeted by the Seto Inland Sea Law was wide-ranging, including not only preservation of water quality and conservation of the natural scenic beauty of both the water regions and the land with which they are integrally connected, but also preservation of the plant and animal living environments that are integrally related to the preservation of these regions.

These policies have resulted in cooperative environmental preservation efforts on the part of the national government and local public organizations, businesses, citizens and so on. In recent years, international exchanges have been actively promoted as well, and the Seto Inland Sea has become famous worldwide in terms of efforts to preserve the

environment of enclosed coastal seas (water regions).

2 Socioeconomic Status of the Seto Inland Sea

The Seto Inland Sea plays a crucial role in Japan's lifestyles, production, transport and recreation. The recent status of socioeconomic factors relating to the Seto Inland Sea are summarized in the following sections.

(1) Population

The population of the Seto Inland Sea regions designated by the Seto Inland Sea Law is approximately 30 million and is increasing gradually at the same rate as the national average. Overall, it is a densely populated region, but the population is particularly centralized in the coastal regions.

(2) Manufacturing

The Seto Inland Sea is one of Japan's most important manufacturing regions, with petrochemical, petroleum refining, steel and other basic industries accounting for 30% of all products shipped in Japan. However, with the globalization of the economy in recent years, the share of industrial products shipped nationwide accounted for by the Seto Inland Sea region is gradually decreasing, leading to the need for advances in existing industries, creation of new industries and other major changes in the industrial configuration.

(3) Fishing

Even compared with other enclosed coastal seas throughout the world, the Seto Inland Sea has an extremely high fishing yield per unit area. As of 1997, it accounted for about 14% of all of Japan's coastal ocean fishing and about 25% of all of Japan's fish cultivation. In recent years, fish cultivation has surpassed ocean fishing in terms of both fishing catch and yield.

(4) Distribution

Since ancient times, the Seto Inland Sea has been a center for maritime transport. Its coast is dotted with numerous harbors that serve as centers for distribution. In recent years, the amount of cargo handled by ports in the 11 prefectures bordering the Seto Inland Sea came to about half of all of that handled nationwide, amounting to some 1.6 billion tons of foreign and domestic cargo. This figure is increasing by a small amount each year.

With the recent completion of the "Onomichi-Imabari Route," there are now three land routes connecting the island of Honshu with Shikoku, reducing the distance and the

amount of time needed to cross the Seto Inland Sea and thus spatially integrating the region. This is expected to create a new economic and living sphere through more wide-ranging contact and strengthening cooperation.

3 Changes in the Inland Sea Environment and Issues to be Resolved

The following sections cover changes in the environment of the Seto Inland Sea since the Seto Inland Sea Law went into effect, and new issues that have surfaced in recent years.

(1) Water Quality

Up to now, steps to improve the quality of the water in the Seto Inland Sea have consisted of measures to reduce the pollution load, using such methods as an approval system for establishing and changing specific facilities, restrictions on the total amount of pollution loads as measured by the chemical oxygen demand (COD), and guidelines for reducing nitrogen and phosphorous. Thanks to these measures, the COD pollution load from industrial waste has been reduced to less than half the amount recorded when the Seto Inland Sea Law first went into effect, and progress in building sewers and other facilities has also caused a steady reduction in the amount of domestic sewage. "Red tides" are also down to 40% of the average yearly number of occurrences compared to when these occurred frequently across the entire Seto Inland Sea. Consequently, the crisis is thought to have been averted.

However, organic pollutants in the Seto Inland Sea result both from the inflow of organic pollutants to the sea and from the so-called "internal production," i.e., plant plankton that propagate due to the increase in nitrogen, phosphorous and other nutrient salts. As a result, there has been little change in recent years in either the level of achievement in environmental standards or the number of occurrences of "red tides" each year, and so it cannot necessarily be said that the water quality in the Seto Inland Sea is satisfactory. Moreover, in some areas, oxygen-depleted masses occur on a seasonal basis. On the other hand, the problem of low-level pollution caused by mercury, PCB and so forth that arose during the years of rapid economic growth has been resolved through such measures as dredging and containment.

(2) Seaweed Beds / Tidal Flats

The Basic Plan calls for efforts to preserve, to the greatest extent possible, the seaweed

beds and tidal flats that are important for conserving marine resources and an important habitat and foraging ground for migratory birds. Although the rate at which seaweed beds and tidal flats are disappearing has slowed since the Seto Inland Sea Law went into effect, approximately 1,300 hectares of seaweed beds (amounting to 21% of the loss nationwide) and approximately 800 hectares of tidal flats (21% of the loss nationwide) have disappeared from the Seto Inland Sea during the 13 years between 1978 and 1991. Of these, 40% of the seaweed beds and 70% of the tidal flats were lost due to changes brought about by man in the form of land reclamation, dredging and the like.

As of 1991, there were approximately 17,500 hectares of seaweed beds and approximately 11,700 hectares of tidal flats in the Seto Inland Sea coastal regions, amounting to 9% and 22%, respectively, of the national total. Only a tiny percentage of these seaweed beds and tidal flats have been designated as protected water surfaces, bird or special animal sanctuaries etc. based on the Law for Conservation of Aquatic Resources (Suisan shigen hogoho).

(3) Scenic Beauty

The unique scenic beauty of the Seto Inland Sea consists both of natural scenery -- an ocean dotted with myriad islands, and beautiful coastlines and beaches with white sand and green pines -- and man-made scenery created through the interaction of people and nature throughout history, such as fishing ports, terraced fields and other farmland scenery, and towns of historical importance. However, on the many islands of the Seto Inland Sea, rapid depopulation and the progressive aging of the population have endangered the survival of cultures that have developed throughout history and have even affected the efforts of the citizens toward environmental conservation, resulting in the problem of illegal dumping of wastes in some areas. Moreover, the natural coastlines that help create this magnificent scenery continue to steadily disappear due to development and other factors. In the 15 years between 1978 and 1993, approximately 110 kilometers of natural coastline and 50 kilometers of semi-natural coastline were lost.

Man-made scenery is also gradually disappearing as well, due to the industrialization that began in the period of rapid economic growth, the development of a mass-consumption, mass-disposal lifestyle, standardized environmental maintenance techniques and other factors.

Note

Natural coastline: Coastline (shoreline) that has been preserved in its natural state without being altered by man

Semi-natural coastline: Coastline (shoreline) in which a portion of the coast has been altered by man through roads, embankments, concrete blocks and so forth, but whose intertidal zone has been kept in its natural state

(4) Land Reclamation

Land reclamation in the Seto Inland Sea should be strictly limited based on Seto Inland Sea Law Article 13, Basic Policy for Implementation of Standards Regarding Reclamation (Umetate ni tsuite no kitei no unyo ni kansuru kihon hoshin) hereinafter referred to as the "Reclamation Policy". Even when reclamation is judged unavoidable and is approved, this should be done only on condition that its impact on the environment be negligible. A comparison of the increase in the area of land reclamation allowed shows that there was a dramatic drop after the Seto Inland Sea Law went into effect, illustrating the effectiveness of the restrictions.

Yet even after the Seto Inland Sea Law went into effect, more than 400 hectares of land per year were reclaimed for harbor maintenance, urban renewal, waste disposal and the like, mainly in shallow regions. Moreover, most of the reclaimed land is in areas fronting cities, increasing the amount of shoreline that is not available to local residents and reducing their opportunities to come in contact with the ocean.

In addition to introducing advanced wastewater treatment and the construction of green areas designed to provide increased ocean access, recent land reclamation efforts are beginning to incorporate gently sloping embankments, man-made lagoons and other environmental measures designed to provide increased ocean access, purify ocean water and create habitats for living things, based on the increased awareness in recent years of the importance of environmental management. However, the effect of these measures has not always been sufficiently elucidated.

(5) New Issues

(a) Excavation of Sand from the Ocean Floor

Since the period of rapid economic growth, large quantities of sand have been excavated from the ocean floor on a continuing basis, primarily for use as concrete aggregate. Regarding the excavation of sand, the Basic Plan says that "the excavation of sand from

the ocean floor shall be done with sufficient consideration given to the preservation of the environment such as animal and plant habitats." Local public organizations that excavate sand from the ocean floor take steps to preserve the environment such as designating permitted and forbidden areas for excavation. However, in regions in which sand is excavated from the ocean floor, the existence of locations where the water depth has increased greatly and in which rubble has accumulated on the ocean floor has been confirmed, leading to concerns regarding the environmental impact of excavating sand from the ocean floor.

(b) Littering

Litter resulting from current lifestyles accumulates on the beaches, harming the scenic beauty of the Seto Inland Sea and impairing people's enjoyment of the region. It also accumulates on the ocean floor, adversely affecting the nature of the bottom sediment and negatively impacting the habitats of the creatures that live on the ocean floor and impairing fishing operations. Recently there have been reports of pollution caused by plastic wastes in particular. The physical properties of plastics enable them to remain in the ocean environment for long periods of time, and their effect on wild life through mistaken consumption and so on has been confirmed. However, effective countermeasures have not yet been established.

(c) Oil spills

Following the oil spill in the Japan Sea caused by the tanker Nahodka in January 1997, the national government began working to upgrade its fleet of ships equipped with oil cleanup functions and build up its maritime safety organization. Local public organizations also moved ahead with improvements in their emergency management organizations in order to cope with a large-scale oil spills, by improving their liaison organizations, establishing councils with members from both public and private sectors and improving the organization of assistance between local public organizations. However, few local public organizations have specified the scope and methods to be used for preservation of natural environments, fishing grounds and so forth in the event of an accident.

(d) New Measures to Deal With Harmful Chemical Substances

In recent years, concerns have been raised regarding the environmental impact of pollution by dioxins, environmental endocrine disrupters and the like even in the Seto Inland Sea.

4 New Trends in Environmental Policy

Since the United Nations Conference on Environment and Development held in 1992, a

common recognition has been established worldwide for the need to create a society capable of sustained development which places little burden on the environment, and efforts are underway at the local level to make this a reality. In Japan, in 1993 the new Basic Environment Law (Kankyo kihonho) was established in place of the Basic Pollution Control Law (Kogai taisaku kihonho) to indicate Japan's basic philosophy on environmental management, the role of various entities, basic measures and means for promoting these measures, and so on. In 1994, a Basic Environmental Plan based on this law was established.

The Basic Environment Law calls for efforts to reduce the burden on the environment caused by socioeconomic activities to be conducted with an equal division of responsibilities among all entities, in order to create a society capable of sustainable development. The new law goes much further than the previous concepts of preventing pollution and protecting nature. Regarding environmental management, the law identifies the need to (1) make sure the air, water, soil and other natural constituent elements of the environment are maintained in a satisfactory state; (2) ensure biodiversity and make sure that diverse natural environments are preserved systematically in accordance with the natural and societal conditions of the region; and (3) ensure ample opportunities for people to come in contact with nature.

The Basic Environmental Plan identifies four elements (recycling, coexistence, participation and international efforts) as long-term objectives for environmental policy, and proposes the approach to measures designed to achieve these objectives. Water environments are covered comprehensively in terms of water quality, water quantity, aquatic life, shorelines and so on; in addition to preserving the safety of water environments the law stresses the need to promote comprehensive measures to reduce the load of water usage at all levels, preserve the ecology of water regions and so on.

Based on the fundamental philosophy of the Basic Environment Law, in 1997 the Environmental Impact Evaluation Law (Kankyo eikyo hyokaho) was enacted as a mechanism for companies to study, predict and evaluate environmental impact and to incorporate appropriate consideration for the environment into projects by reflecting citizen's views and through other wide-ranging informational exchanges.

At the Conference of the Parties to the U.N. Framework Convention on Climate Changes (COP3) held in Kyoto in December 1997, the Kyoto Protocol for the prevention of global warming was adopted. This protocol establishes strict objectives for a reduction in greenhouse gases in Japan, and greater cooperation among industry, transport companies and private citizens will be needed to achieve these objectives.

In 1998, the Law Concerning the Promotion of Specific Non-Profit Organization

Activities, or "NPO law" (Tokutei hieiri katsudo sokushinho) was enacted and went into effect that same year. The law is designed to promote volunteer activities and other actions freely undertaken by citizens to make a contribution to society.

With these new trends in environmental policy both at home and abroad, local public organizations are establishing basic environmental ordinances, regional environmental plans and the like, and there has been a great increase in the awareness of global environmental problems and other environmental issues on the part of the general public.